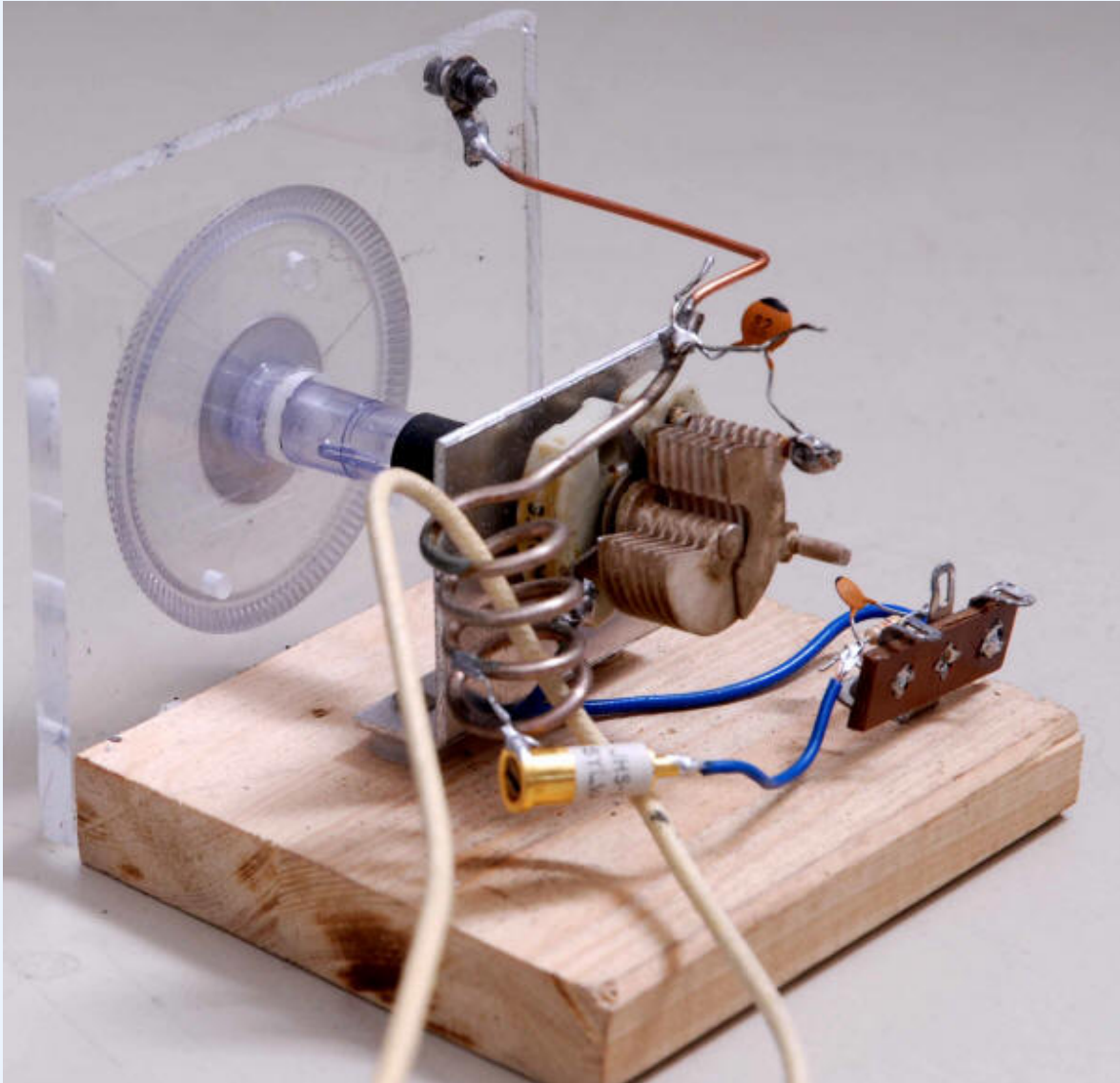


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# Simple crystal receiver for FM

[Carlo Bramanti](#)



After the success obtained in the realization of the "galena" FM with the resonant cavity, I had promised myself to try also with a simple LC resonant circuit. One of my galena mates favored what he had built without success and I set about making it work.

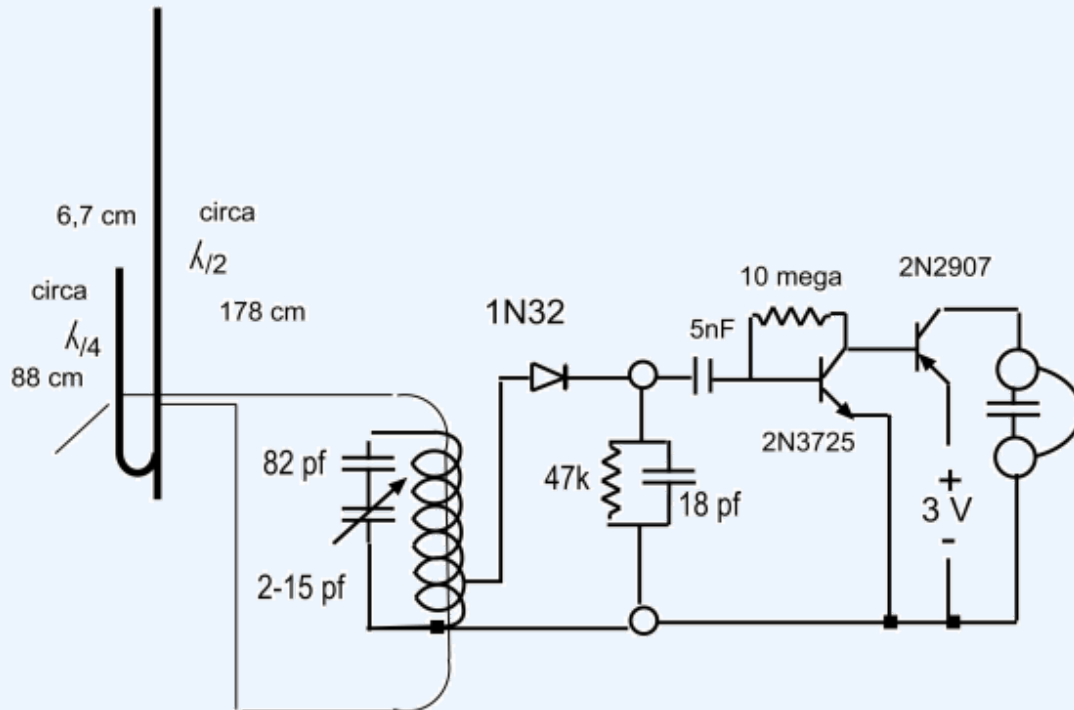
## Operation

With the experience that the audio signal resulting from this detection is very low, I immediately applied the two-transistor amplifier I have already described on these pages. With the fully extended stylus it did not actually work, but by lowering it, you already felt something.

## The link

When I connected it to the J antenna it worked fine. The connection that gave me the best results was a simple conductor loop over eighty cm (about  $\frac{1}{4}$  wave), passed through the resonant coil. If we use a cable to move the

antenna away, the loop connects directly to the cable. I have no particular experience on these frequencies and I think that those who have more can still improve performance. In any case they are already adequate, even if slightly inferior to that of the cavity, with the advantage that everything is much more comfortable and pleasant.



### The theory

Normal AM revelation can not reveal weak signals with the consequence that it is useless to amplify after the revelation, since it increases only the volume and not the sensitivity. Instead the detection of the FM also handles very weak signals: therefore, amplifying after the detection, all the weakest stations appear. The amp that I made amplifies a lot (in AM it also acts as a detector, but in FM it must be preceded by a diode); it can be powered by a 3 V lithium drain and it consumes very little: it is even sufficient to disconnect the earphone for almost zero consumption. This makes the use of a switch superfluous.

### J antenna

It is an antenna that is easy to realize by bending a copper pipe by fontaniers, with a diameter of 6 o 8 mm. Fixing to a pole or base does not require isolation.

### The diode 1N32

I obtained an additional advantage by replacing the germanium diode OA85 with the one with contact tip silicon 1N32, a little old but available and used as a mixer for the K band.

### NOTE

In the aforesaid realization the frequencies from 88 to 104 Mc are listened with a rotation of the variable of only 45 degrees, or half of the excursion. Above I hear nothing.

The excursion with trimmers and padders should therefore be extended, while maintaining the optimal L / C ratio.

### Realization:

Coil in silver wire from 2 mm.

Average diameter 14 mm

Length 19.5 mm

Number of turns 4

1 ½ coils outlet from the municipality

Ground connection not necessary

### **Proposal**

I would have made the coil with three turns of three millimeters, diameter three cm, length three cm. The Q would be one and a half times higher, which on balance, would improve performance slightly; except try, in this discipline you never know!

See other Bramanti articles on [FM Demodulation](#) and [Cavity Detector](#)

See also the [Bramanti on Galene page](#)

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